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EXAMINER	
CONLEY, SEAN EVERETT	
ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
11/25/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/074,992	BURRIS ET AL.	
	Examiner	Art Unit	
	SEAN E. CONLEY	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/24/2009, 11/10/2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,7-18 and 20-34* is/are pending in the application.

4a) Of the above claim(s) *32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5, 7-18, 20-31, and 33-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 24, 2009 has been entered. Claims 1-3, 5, 7-18, and 20-34 are pending with claim 32 remaining withdrawn from consideration.

Election/Restrictions

2. In the response filed July 24, 2009 the Applicants respectfully traverse the restriction requirement of claim 32 in view of the amendments thereto. However, the restriction requirement is proper and maintained since the claimed device can be used in a materially different process. For example, the device can be used in a method of disinfecting water lines by simply circulating a disinfectant such as hydrogen peroxide or peracetic acid from the liquid reservoir through the system without the addition of the ozone gas. In addition, the device as claimed can be used in a process of dispensing a disinfecting liquid located in the liquid reservoir from the operatory unit in order to disinfect a surface external of the device. As such, the requirement is still deemed proper and is therefore made FINAL. Claim 32 remains withdrawn from consideration.

Response to Arguments

3. The rejection of claims 33 and 34 under 35 U.S.C. 112, 2nd paragraph cited in the final office action are withdrawn in response to the claim amendments filed July 24, 2009. However, new rejections under 35 U.S.C. 112, 2nd paragraph appear below.

4. Applicant's arguments concerning the 35 U.S.C. 103 rejections, see pages 10-12 filed July 24, 2009, have been fully considered but they are not persuasive.

First, the Applicant argues the following:

"*Considering the rejection of claims 1-3, 5, 7-18, 20-31 and 33-34, Applicants submit that the suggested combination fails to support all the limitations recited in amended claims 1 or 30. Among other limitations, Applicants respectfully urge that Contreras and Burris '993, both alone and in combination, fail to teach the circulation system including a pressure regulator to maintain positive pressure in the circulation passageway. The Examiner continues to assert that the pump 10 of Contreras accomplishes such a function. Moreover, as Applicants have submitted a claim that recites a pressurized circulation loop AND a pressure regulator, Applicants remain puzzled as to the Examiner's basis for ignoring this fact and urging that Contreras and its recited pump discloses such limitations. Not only is it unclear from Contreras how a pressurized liquid circulation passageway is disclosed (when passageway 27 drains into an unpressurized reservoir), but also how the pump operates as a pressure regulator.*"

The Examiner respectfully disagrees. The operation of the pump (10) of Contreras generates an increased pressure of fluid flow and therefore is capable of operating as a pressure regulator in the circulation system. For example, turning the pump (10) on/off or even operating the pump speed generates different amounts of fluid pressure within the fluid lines. Furthermore, the fluid pressure generated by the pump (10) of Contreras creates a pressurized circulation loop by increasing the fluid pressure within the fluid lines. The fluid circulation loop does not need to be closed in order to create a pressurized circulation loop. There only has to be an increase in the fluid pressure (i.e. the fluid pressure generated by the pump (10) of Contreras) in order to meet the claimed limitation of a "pressurized liquid circulation loop".

The Applicant further argues the following:

"Furthermore, neither Contreras nor Burris '993, alone or in combination, teach a control system including an ozone sensor located in the pressurized liquid circulation passageway, and an alarm to indicate whether the device is operating properly (e.g., claim 1). The Examiner continues to allege such limitations are taught by Burris '993, however, Burris '993 is also not understood to include a pressurized liquid circulation passageway, let alone one that includes an ozone sensor."

The Examiner respectfully disagrees. As stated in the previous office action and in the rejection below, Burris discloses a control system (30) which includes an ozone sensor (25) located in the liquid passageway and an alarm (warning or indicator light) to indicate that the system is not functioning properly. The activation of the alarm results in the ozone generator shutting down (see col. 4, lines 23-33). The control system (30)

controls operation of pumping system (20) and ozone generator (15) (see col. 3, lines 57-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Contreras and employ a control system comprising an ozone sensor and alarm as exemplified by Burris in order to ensure that the water contains dissolved ozone. Furthermore, the control system is capable of shutting down the pump system (20) in response to a lack of supply water (see col. 4, lines 33-34). Claims 1-3, 5, 7, 9, 18, 20-31 and 33-34 remain rejected under 35 U.S.C. 103 as being unpatentable over Contreras in view of Burris. See rejection below.

The Applicant further argues the following:

"Claim 1 was rejected under 35 USC §103(a) as being unpatentable over Burris '993 in view Contreras. With respect to the rejection of claim 1, Applicants again respectfully urge that the amended independent claim, as described above, is patentably distinguishable over any combination of Burris '993 and Contreras. For purposes of brevity, Applicants have not re-asserted the arguments set forth in detail above, but instead incorporate them herein."

The Examiner respectfully disagrees with these agreements for the reasons stated above.

The Applicant further argues on pages 11-12:

"Moreover, in the rejection based upon Burris '993 in view of Contreras, the Examiner selectively picks from the description and thereby ignores the context in which the teachings are set forth. For example, the examiner states at page 14 of the final

Office Action, describing the features of '993, "[a] circulation system, i.e., circulation loop, draws liquid from the reservoir 36 via line 16 through pumping system 20 (which is a pressure regulator) and returns purified liquid to the reservoir via line 41. Therefore, the circulation system re-circulates liquid containing dissolved ozone and is capable of continuous circulation (Col. 5 ll. 59-67)." As previously noted, following this text the '993 description reads, "[w]hen treatment is completed and outflow is desired, valve 44 changes state, preferably in response to an outflow switch so that liquid flows directly to an outlet from pump 43. Generator 15 is preferably turned off while this occurs." Applicants once again respectfully contend that the context of Burris '993 clearly indicates that the invention of Burris '993 is a batch unit and is distinct from a continuous re-circulation device as presently recited in the rejected claim."

The Examiner finds this argument not persuasive for the following reasons. Even of Burris '993 is a batch unit, Burris does disclose continuous recirculation within the batch unit. The claimed limitation of "a continuous circulation system that continuously re-circulates the liquid" is not strictly distinct from the structure disclosed by Burris.

The Applicant further argues the following on page 12:

"Claims 1-3, 5, 7-16, 18, 20-29, 31 and 33-34 were rejected under 35 USC §103(a) as being unpatentable over Engelhard et al., US 5,942,125 ("Engelhard") in view of Burris '993. Applicants continue to submit that the suggested combination fails to support all the limitations recited in claim 1. Among other limitations, Applicants respectfully submit that neither Engelhard nor Burris '993, alone or in combination, teach a control system and an ozone sensor, located in said liquid circulation

passageway. Accordingly, claim 1 is urged to be patentably distinguishable over the combination of Engelhard in view of Burris '993, and the rejection is respectfully traversed. Applicants believe amended independent claim 1 is in condition for allowance, as are rejected claims 2-3, 5, 7-14, 16-18, 20-29 and 31, dependent therefrom."

The Examiner respectfully disagrees. The combination of Engelhard in view of Burris is set forth below and as stated previously, Burris discloses a control system (30) which includes an ozone sensor (25) located in the liquid passageway and an alarm (warning or indicator light) to indicate that the system is not functioning properly. The activation of the alarm results in the ozone generator shutting down (see col. 4, lines 23-33). The control system (30) controls operation of pumping system (20) and ozone generator (15) (see col. 3, lines 57-68). The arguments directed to claim 31 are moot in view of the new grounds of rejection over Engelhard in view of Burris wherein the control system, ozone sensor, and alarm of Burris are included in the device of Engelhard. The control system (30) disclosed by Burris ('993) is capable of being turned off in response to a period of non-use. The operator of the device may turn off the device during a period of non-use by turning off the switch that operates the device (see col. 4, lines 23-33 of Burris).

Finally, concerning claim 31, the Applicant argues the following: *"However, with respect to the rejection of dependent claim 31, Applicants respectfully contend that the Examiner has improperly characterized the teachings of Engelhard, particularly relative to a control system. Col. 3, lines 57-63 do not appear to teach "a control system wherein*

the control system, in response to a period of non-use, turns the device off." Applicants seek to clarify this by amendment of claim 31. Accordingly, the rejection of dependent claim 31 is traversed.

In response to the above argument, the rejection of claim 31, as being unpatentable over Engelhard in view of Burris et al. is withdrawn.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 31 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "automatically" in amended claim 31 is considered new matter since the specification does not provide support for automatically turning off the device in response to a period of non-use.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-3, 5, 7-18, 20-29, 31, and 33-34 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claims 2-3, 5, 7-18, 20-29, 31, and 33-34 are rejected for the same reasons as applied to claim 1 since they depend form and include all of the limitations of independent claim 1.

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1-3, 5, 7, 9, 18, 20-23, 25-31, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Contreras (U.S. patent No. 5,824,243) in view of Burris (U.S. patent No. 5,207,993).

Contreras teaches a water ozonating system having a corona discharge ozone generator coupled to a water reservoir and to the pressurized continuous liquid re-circulation system, to dispense active, disinfecting ozonated water to the circulation lines of a dental operatory unit to kill microorganisms therein. A check valve is provided to ensure that water does not reach the ozone generator, pressure control means are provided including a pump (10) for pressurized circulation and thus pressure regulation

of the ozonated water. Control means are further provided to control activation, operation and delivery of the water (ball valve (3) to control water flow, a float valve (4) to regulate the incoming water level, and a water flow sensor (20) to activate the pump (10) (see col. 2, lines 58-68; see col. 3, lines 47-50)). Ozone is mixed with the water in the reservoir through a diffuser (19) and the action of the pump means and a venturi. Off gas is captured and returned to the reservoir (see the abstract, column 3, lines 35-68 and column 4, lines 11-20).

Burris et al., '993 teach a water purification device for point-of-use application wherein there is a liquid source, a corona discharge ozone generator, hydrophobic means (element (24)) for preventing access to the ozone reducer by the liquid (see col. 3, lines 44-56), hydrophobic means for preventing liquid from entering the ozone generator (see col. 2, lines 56-62), means for mixing the ozone and liquid, means for circulating the ozonated liquid, means for separating excess ozone gas from the ozonated liquid and destroying that excess ozone prior to atmospheric release, and means for maintaining the liquid source. Burris et al., '993 provide a positive pressure pump for mixing and circulating the ozonated water, while teaching the equivalence of static diffusers and venturi means, as well. Burris et al., '993 teach the use of the device for provision within offices or compact location such as under sinks (see column 2, lines 40-68, column 3, lines 5-35 and 55-68, column 4, line 23 through column 5, line 35, and the figures).

It would have been well within the purview of one of ordinary skill in the art to employ the ozone off-gas destruction means of Burris in the system of Contreras,

because it would provide for the safe disposal of the off-gas if the system requires abrupt shut-down which would not allow for the time consuming, natural dissipation of the off-gas as required by return of the off-gas to the reservoir.

Furthermore, Burris discloses a control system (30) which includes an ozone sensor (25) located in the liquid passageway and an alarm to indicate that the system is not functioning properly. The activation of the alarm results in the ozone generator shutting down (see col. 4, lines 23-33). The control system (30) controls operation of pumping system (20), ozone generator (15) (see col. 3, lines 57-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Contreras and employ a control system comprising an ozone sensor and alarm as exemplified by Burris in order to ensure that the water contains dissolved ozone. Furthermore, the control system is capable of automatically shutting down the pump system (20) in response to a lack of supply water such as during a period of non-use (see col. 4, lines 33-34).

With respect to claim 2, Contreras discloses a pressure regulation means (pump (10) for maintaining proper pressure in the liquid circulation passageway (waterlines (15) and (11)) (see col. 3, lines 10-35).

With respect to claim 5, Contreras discloses an ozone generator (17) (see figure; see col. 3, lines 35-40) which is capable of generating more ozone than can be dissolved in water if that is the desired intended use of the device. One could reduce the water flow using the ball valve (3) such that only a few drops of water enter the storage tank (2) and thus the ozone filling the reservoir would be more than can be dissolved in

the liquid flow. Therefore, the ozone generator is of size sufficient to generate more ozone than can be dissolved in the liquid flow.

With respect to claims 12 and 13, the insertion of the ozone off-gas destruction means of Burris into the device Contreras (as stated above for the rejection of claim 1) would result in device that includes a porous hydrophobic barrier (24) that prevents any liquid from entering the ozone reducing material (26) of the ozone destruct unit. It would have been obvious to one of ordinary skill in the art to substitute the check valve protecting the ozone generator of Contreras with the porous, hydrophobic barrier means (element (24)) of Burris since during a shutdown operation the element (24) would enable ozone off-gas to pass to the destruct unit (26) while at the same time prevent water from entering the destruct unit or the ozone generator via tubing (26).

With respect to claim 14, Contreras does provide a liquid source via inlet port (1). This source of water is preferably non-pressurized, however, it does not eliminate the use of pressurized water (see col. 2, lines 57-65). Therefore, the water from the water entry line may be pressurized and thus provides at least some of the pressure to circulate and output the ozonated liquid though waterline (11) (see figure).

With respect to claim 16, Burris discloses the use of a drain (57) from a reservoir (36). Pump (53) pressurizes the circulation system and ozonated water that is not used is output through the drain (57) (see figure 9; see col. 7, lines 32-41). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a drain line (57) into the liquid circulation line of Contreras in order to dispose of any unused ozonated water as exemplified by Burris.

With respect to claim 17, Contreras clearly teaches the use of the invention for dental operatory procedures (see abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that use of the device in a dental operatory procedure includes fluidly connecting all necessary dental operatory equipment requiring water, including a cuspidor drain structure, to the water ozonating system, in order to ensure that the surfaces and sources of water are clean and sterile.

With respect to claim 23, Burris discloses the use of dried air that has passed though a dryer to help keep moisture out of the ozone generator (see col. 3, lines 7-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a dryer and supply dried air to the ozone generator of Contreras as exemplified by Burris in order to prevent moisture from getting into the ozone generator.

With respect to claims 27-29, Contreras clearly discloses that the device may be used in dental operatory procedures for supplying sterile water (see abstract). It is well known that in dental operatory procedures the dental tools are air powered and often used in combination with water dispensing/rinsing devices. Thus, it is obvious that when the device of Contreras is used in a dental operatory procedures an ozonated water dispensing means (for example, a nozzle having a valve for turning on and off) would be connected to the device and furthermore is located very near air powered dental handpieces. It should be noted that the limitations of claim 29 do not further limit the structure of the claimed device. The claimed device does not require a source of air

pressure, but only a valved dispensing means that is responsive to air pressure. A valved dispensing means that is responsive to air pressure is inherently disclosed by Contreras when the device is used in a dental operatory procedure.

With respect to claim 30, Contreras teaches a water ozonating system having a corona discharge ozone generator coupled to a water reservoir and pressurized liquid circulation system, to dispense active, disinfecting ozonated water to the circulation lines of a dental operatory unit to kill microorganisms therein. A check valve is provided to ensure that water does not reach the ozone generator, pressure control means are provided including a pump (10) for pressurized circulation and thus pressure regulation of the ozonated water. Control means are further provided to control activation, operation and delivery of the water (ball valve (3) to control water flow, a float valve (4) to regulate the incoming water level, and a water flow sensor (20) to activate the pump (10) (see col. 2, lines 58-68; see col. 3, lines 47-50). Ozone is mixed with the water in the reservoir through a diffuser and the action of the pump means and a venturi. Off gas is captured and returned to the reservoir (see the abstract, column 3, lines 35-68 and column 4, lines 11-20). Although Contreras does not explicitly use the term "control means" it is clear that the device inherently has control means because Contreras states that the system provides for automatic replenishment of fresh water whenever active-ozonated water is used (see coil. 2, lines 47-56). More specifically, the control system includes a ball valve (3) to control water flow, a float valve (4) to regulate the incoming water level, a water flow sensor (20) to activate the pump (10), and a solenoid valve (7) to shut off the water supply in response to activation of overflow switch (6)

(see col. 2, lines 58-68; see col. 3, lines 1-10, 47-50). These components all form part of a control system which ensures that the device operates as desired to produce liquid containing dissolved ozone and to circulate and output liquid containing dissolved ozone. Furthermore, the control system is capable of shutting down the device after a period of non-use. Contreras discloses the use of multiple sensors (water flow sensor (20) and overflow safety switch (6) mounted in the tank (2)) to prevent the tank form spilling over into the environment. A solenoid valve (7) (part of the control system) will shut the incoming water into the storage tank (2) when activated by the overflow safety switch (see col. 3, lines 1-10). Thus, Contreras teaches the claimed control system and sensor.

Burris et al., '993 teach a water purification device for point-of-use application wherein there is a liquid source, a corona discharge ozone generator, hydrophobic means (element (24)) for preventing access to the ozone generator by the liquid (see col. 3, lines 44-56), means for mixing the ozone and liquid, means for circulating the ozonated liquid, means for separating excess ozone gas from the ozonated liquid and destroying that excess ozone prior to atmospheric release, and means for maintaining the liquid source. Burris et al., '993 provide a positive pressure pump for mixing and circulating the ozonated water, while teaching the equivalence of static diffusers and venturi means, as well. Burris et al., '993 teach the use of the device for provision within offices or compact location such as under sinks. See column 2, lines 40-68, column 3, lines 5-35 and 55-68, column 4, line 23 through column 5, line 35, and the figures.

It would have been well within the purview of one of ordinary skill in the art to employ the ozone off-gas destruction means of Burris in the system of Contreras, because it would provide for the safe disposal of that off-gas if the system requires abrupt shut-down which would not allow for the time consuming, natural dissipation of the off-gas as required by return of the off-gas to the reservoir.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burris ('993) in view of Contreras.

Burris Figure 5 shows "an in-line system for pumping liquid from a reservoir to a purified liquid container while contacting the liquid with ozone to ensure its purification." (Col. 1, 11.60-63). The system 35 includes:

A liquid source, i.e., reservoir 36, which can be refilled on a batch basis preferably via trap 37 or from a pressurized supply line. (Col 5, 11.28-29; col. 7, 11.35-37);

An ozone generator 15 for producing an ozone containing gas. (Col. 2, 11.56-58). Generator 15 is preferably a corona discharge generator. (Col. 2, 11.62-64).

A protection system, check valve 18, "that allows gas to pass through but prevents any liquid backflow from reaching generator 15." (Col. 2, 11.59-62).

An ozone mixing system, pumping system 20, "contacts the liquid with ozone containing gas from generator 15 so that the liquid is purified." (Col. 2, 11.46-49).

A continuous circulation system, i.e., circulation loop, draws liquid from reservoir 36 via line 16 through pumping system 20 (which is a pressure regulator) and returns

purified liquid to the reservoir via line 41. Therefore, the circulation system re-circulates liquid containing dissolved ozone and is capable of continuous circulation (Col. 5, 11.59-67).

A separation system, i.e., reservoir 36, for separating gas and liquid from the ozonated liquid prior to circulation. (Col. 5, 11.24-25).

A reducing system, i.e., ozone reducer 23, containing a material for reducing the concentration of ozone in any gas entering the atmosphere. (Col. 3, 11.25-27).

A liquid admitting system, i.e., trap 37, for adding liquid to reservoir 36. (Col. 7, 11.4-5).

A control system (30) for controlling the device to operate as desired to produce liquid containing dissolved ozone and to circulate and output liquid containing dissolved ozone, said control system further including an ozone sensor (25), located in said liquid circulation passageway, the ozone sensor (25) connected to said control system (30) and said control system further connected to an alarm to indicate whether the device is operating properly. The activation of the alarm results in the ozone generator shutting down (see col. 4, lines 23-33). The control system (30) controls operation of pumping system (20), ozone generator (15) (see col. 3, lines 57-68).

However, Burris fails to explicitly disclose the point of use application of the ozonated water generated by the device.

Contreras teaches a water ozonating system having a corona discharge ozone generator coupled to a water reservoir and pressurized liquid circulation system, to

dispense active, disinfecting ozonated water to the circulation lines of a dental operatory unit to kill microorganisms therein (see abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to connect the outlet of the device disclosed by Burris to an operatory unit in order to supply the operatory unit with sterile water as exemplified by the device of Contreras whom teaches that it is well known to generate sterilize ozonated water for use in operatory units.

12. Claims 1-3, 5, 7-16, 18, 20-23, 25-29, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engelhard et al. (U.S. patent No. 5,942,125) in view of Burris ('993).

Engelhard et al., teach substantially the invention as claimed, namely an ozone generator connected to a source of Compressed air and a water line, with means to mix ozone and water to provide an active, ozonated water for distribution to the circulation lines of a dental operatory unit. Pressure control and monitoring means are provided as well as ozone sensors, and the operation of the system is controlled based on those measured parameters. Off gas is sent through means to destroy any residual ozone prior to release to the atmosphere. Means are also provided to protect the ozone generator from contact with water. The ozone generator of Engelhard et al. is an UV generator. See column 2, lines 33-40, column 3, lines 35-68, column 4, lines 10-20 and lines 31-43, and column 5, lines 10-35. Burris is applied as set forth above.

It would have been well within the purview of one of ordinary skill in the art to substitute the corona discharge ozone generation means of Burris for the UV generator of Engelhard et al., because of their conventionally recognized functional equivalence.

Furthermore, Burris discloses a control system (30) which includes an ozone sensor (25) and an alarm to indicate that the system is not functioning properly. The activation of the alarm results in the ozone generator shutting down (see col. 4, lines 23-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Engelhard and employ a control system comprising an ozone sensor locate in the liquid circulation passageway and an alarm as exemplified by Burris in order to ensure that the water contains dissolved ozone. In addition, the control system is capable of shutting down the pump system (20) in response to a lack of supply water (see col. 4, lines 33-34).

With respect to claim 5, Engelhard discloses an ozone generator (16) which is capable of generating more ozone than can be dissolved in water if that is the desired intended use of the device. One could reduce the water flow such that only a few drops of water enter the tank (12) and thus the ozone filling the tank (12) would be more than can be dissolved in the liquid flow (see col. 3,lines 35-56; see figures 1-2). Therefore, the ozone generator is of size sufficient size to generate more ozone than can be dissolved in the liquid flow.

With respect to claims 8 and 9, Engelhard discloses the use of a sparger (32) to inject ozone into the water. The sparger (32) functions as a static mixer (see figures 1-2; see col. 3, lines 50-56).

With respect to claim 13, it would have been obvious to one of ordinary skill in the art to substitute the check valve protecting the ozone generator of Engelhard et al., with the porous, hydrophobic barrier means of Burris because it would provide a more simply means of protecting the generator irrespective of the pressure within the system and without mechanically moving parts.

With respect to claim 14, Engelhard discloses that water is introduced into the system via water line (14) (see figure 1; see col. 3, lines 35-38). All water is under some amount of pressure as it is introduced. Therefore, the pressure in the water is capable of providing pressure to circulate and output the ozonated fluid if so desired.

With respect to claims 16 and 17, Engelhard discloses a drain (70) connected to a waste line (82) capable of functioning as claimed (see figure 1; see col. 4, lines 21-42).

With respect to claim 23, Burris discloses the use of dried air that has passed though a dryer to help keep moisture out of the ozone generator (see col. 3, lines 7-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a dryer and supply dried air to the ozone generator of Engelhard as exemplified by Burris in order to prevent moisture from getting into the ozone generator.

With respect to claims 27-29, Engelhard teaches that the ozonated water produced within container (12) is discharged into conduit (62). The conduit serves as a water line to provide ozonated water to a manifold attached to each dental chair and in fluid communication with dental implements and other devices that normally discharge

the water received (i.e. valved dispensers) (see col. 4, lines 10-20). It should be noted that the limitations of claim 29 do not further limit the structure of the claimed device. The claimed device does not require a source of air pressure, but only a valved dispensing means that is responsive to air pressure.

13. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Engelhard in view of Burris ('993) or Contreras in view of Burris ('993) as applied to claim 23 above, and further in view of McMahon (U.S. Patent No. 5,681,370)

The combination of Engelhard et al. in view of Burris ('993) and Contreras in view of Burris ('993) is set forth above with regards to claim 23, however, neither combination appears to explicitly disclose how the air is dried for the source of oxygen for the ozone generator. Therefore, it would have been necessary and thus obvious to look to the prior art for conventional means of drying air for an ozone generator. McMahon provides this conventional teaching showing that it is known in the art to use a desiccant material (50) to dry the air that is to be used to generate the ozone, wherein the desiccant material is protected from moist air by valves (78, 88) (see col. 1, see cols. 5-7, see col. 8, lines 10-16).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a desiccant air drier as exemplified by McMahon motivated by the expectation of successfully practicing the invention of either the combination of Engelhard et al. in view of Burris ('993) or Contreras in view of Burris ('993).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E. Conley whose telephone number is 571-272-8414. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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November 19, 2009

/Sean E Conley/
Primary Examiner, Art Unit 1797